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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
LETTMAN, BRYAN MATTHEW	
ART UNIT	PAPER NUMBER
3746	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/589,521	TEIPEN, BERND	
	Examiner	Art Unit	
	Bryan Lettman	3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 October 2009 and 16 November 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,5-11 and 13-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,5-11 and 13-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 August 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October, 29, 2009 has been entered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 5, 6, 9-11 and 13-16 are rejected under 35 U.S.C. 102(b) as being anticipated by U. S. Patent 5,362,206 to Westerman.

Referring to claim 1, Westerman discloses a pump control method comprising the steps of:

at least one measurement step which measures an alternating voltage applied to a pump motor of a synchronous pump and an alternating current of the motor at different points in time to provide a plurality of recorded measured values corresponding to different points in time (col. 7, lines 12-16, whereby a plurality of recorded measured

values taken at different points in time are required to "measure the time period for which signal 55...is high");

a determination step which:

determines an extent of a phase shift between the alternating voltage and the alternating current from the recorded measured values (col. 7, lines 16-19) to provide a succession of phase shift values corresponding to successive points in time (col. 7, lines 20-22, wherein the "function" represents the phase shift angles over a large number of power cycles, wherein the "number of power cycles" are the successive points in time); and

determining the chronological progression of the phase shift from multiple recorded measured values (col. 7, lines 12-22, wherein computer 24 calculates out-of-phase time by measuring the time period for which the voltage and current are out of phase, whereby the computer formulates a chronological progression from the real time signal 55);

determining a characteristic of the phase shift (col. 7, lines 24-27, wherein the function is compared to a predetermined value to determine if it is high); and

an assignment step which assigns the determined characteristic to a predetermined pump operating state in an assignment step (col. 7, lines 27-28, wherein a high phase shift indicates a pump-off condition).

Referring to claim 5, Westerman further discloses a pump control method including the steps wherein:

the assignment step, includes the step of assigning the determined characteristic to a predetermined characteristic value range linked to a pump operating state (col. 7, lines 24-27, wherein all values between zero and the predetermined value indicate a normal operating state).

Referring to claim 6, Westerman further discloses a pump control method including the steps wherein:

the determination step includes the step of determining the extent of the slope of the chronological progression of the phase shift (col. 7, lines 20-24); and

the assignment step includes the step of assigning the determined extent of slope to a predetermined slope value range linked to a pump operating state (col. 7, lines 24-27).

Referring to claim 9, Westerman further discloses a pump control method including the steps wherein:

the determination of the chronological progression of the phase shift in the determination step includes the step of sliding averaging (col. 7, lines 55-66).

Referring to claim 10, Westerman further discloses a pump control method including the steps wherein:

the measurement step includes a conversion of the measured alternating voltage signal and of the measured alternating current signal into rectangular signals (fig. 2).

Referring to claims 11 and 13, Westerman further discloses a device comprising:

a microcontroller including:

a timer (computer 24 inherently has a microcontroller with a timer);

a voltage inlet (col. 7, lines 6-8) for recording a start signal;

a current inlet (col. 7, lines 5-6) for recording a stop signal, said voltage and current inlets being constructed to interpret exceeding of a predetermined voltage signal level (col. 6, lines 54-58) as a start or stop signal, with a content of the timer being proportional to chronological gap between the start signal and stop signal (col.7, lines 49-53); and

a memory (32) for saving a timer content, said memory comprising a number of memory cells to save a sequence of memory contents (inherent of RAM),

wherein the microcontroller (24) comprises an evaluation unit for averaging the memory (32) contents (col. 7, lines 57-61).

Referring to claim 14, Westerman further discloses a pump control method including the steps wherein:

an interface (17) for transmitting operating state-related data to a control unit (30) for controlling the liquid circuit (col. 8, lines 51-53).

Referring to claim 15, Westerman further discloses a pump control method including the steps wherein:

the pump operating state is a low water level state (col. 7, lines 24-27, wherein pump-off is an indication of a low water level state in the fluid column).

Referring to claim 16, Westerman discloses a pump control method comprising the steps of:

at least one measurement step which measures an alternating voltage applied to a pump motor of a synchronous pump and an alternating current of the motor at

different points in time to provide a plurality of recorded measured values corresponding to different points in time (col. 7, lines 12-16, whereby a plurality of recorded measured values taken at different points in time are required to "measure the time period for which signal 55...is high");

a determination step which:

determines an extent of a phase shift between the alternating voltage and the alternating current from the recorded measured values (col. 7, lines 16-19) to provide a succession of phase shift values corresponding to successive points in time (col. 7, lines 20-22, wherein the "function" represents the phase shift angles over a large number of power cycles, wherein the "number of power cycles" are the successive points in time); and

stores the successive phase shift values in a number of memory cells (col. 7, lines 12-15, wherein a computer inherently uses memory which inherently has a number of memory cells),

determines the chronological progression of the phase shift from the phase succession of phase shift values stored in the successive memory cells (col. 7, lines 12-22, wherein computer 24 calculates out-of-phase time by measuring the time period for which the voltage and current are out of phase, whereby the computer formulates a chronological progression from the real time signal 55);

determines a characteristic of said chronological progression (col. 7, lines 24-27, wherein the function is compared to a predetermined value to determine if it is high); and

an assignment step which assigns the determined characteristic to a predetermined pump operating state in an assignment step (col. 7, lines 27-28, wherein a high phase shift indicates a pump-off condition).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent 5,362,206 to Westerman in view of U. S. Patent 4,896,101 to Cobb.

Westerman teaches all the limitations of claim 1 as detailed above, and further teaches a method wherein:

an assignment step includes the step of assigning the determined amplitude of the phase shift to a predetermined amplitude value range linked to a pump operating state (col. 7, lines 24-27, wherein all values between zero and the predetermined value indicate a normal operating state)..

Westerman does not teach the step of reading a phase shift progression of over time. Cobb teaches a method wherein:

a determination step comprises a transformation step in which a chronological progression is subjected to a discrete Fourier transform and the amplitude of the Fourier transform in a predetermined frequency range is determined (col. 7, lines 25-28).

It would be obvious to one of skill in the art, at the time of invention, to modify the pump control method taught by Westerman with the data analysis method taught by Cobb in order to prevent the controller from unnecessarily reacting to an instantaneous transient condition, by using a data trend analyzed by a Fourier transformation over a period of time.

Response to Arguments

Applicant's arguments filed October 29, 2009 have been fully considered but they are not persuasive.

Applicant argues that "Westerman et al merely provides, as discussed above, a single value resulting from an integration of multiple data points, which does not include any time information. Thus, Westerman et al does not provide any chronological progression of the phase shift, as claimed." As detailed in the above rejection, Westerman teaches a function which includes time information.

Applicant argues that "Westerman et al does not disclose or even remotely suggest the feature of storing phase shift values corresponding to different points in time in different memory cells." In col. 7, lines 12-16, Westerman teaches a computer which calculates phase shift values over a period of time, which inherently includes the storing of phase shift values in memory, which inherently includes memory cells.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bryan Lettman whose telephone number is (571) 270-

7860. The examiner can normally be reached on Monday - Thursday between 9:00 am and 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571) 272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/B. L./
Examiner, Art Unit 3746

/Devon C Kramer/
Supervisory Patent Examiner, Art Unit 3746